UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/039,018	12/31/2001	E. David Neufeld	H052617.1132US0	8143

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EXAMINER
LI, ZHUO H

ART UNIT	PAPER NUMBER
2189	

DATE MAILED: 05/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/039,018	NEUFELD ET AL.
	Examiner	**Art Unit**	
	Zhuo H. Li	2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>28 March 2005</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-27</u> is/are pending in the application.

    4a) Of the above claim(s) <u>20-27</u> is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-19</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)   4)☐ Interview Summary (PTO-413)

DETAILED ACTION

Response to Amendment

1.   Applicant's election without traverse of claims 20-27 are cancelled, and claims 1-19 are

pending in the application in the reply filed on March 28, 2005 is acknowledged. Thus, this

Office action is in response to claims 1-19.

Information Disclosure Statement

2.   The information disclosure statement filed May 22, 2002 fails to comply with 37 CFR

1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent

literature publication or that portion which caused it to be listed; and all other information or that

portion which caused it to be listed. It has been placed in the application file, but the information

referred to therein has not been considered.

Claim Objections

3.   Claim 16 is objected to because of the following informalities:

        Regarding Claim 16, the limitation "the file access system" in line 1 should be --the file

system--, according to claim 13.

        Appropriate correction is required.

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

5.   This application currently names joint inventors. In considering patentability of the

claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

claims was commonly owned at the time any inventions covered therein were made absent any

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c)

and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6.   Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ban (US

PAT. 6,732,221) in view of Lofgren et al. (US PAT. 6,230,233 hereinafter Lofgren).

Regarding claim 1, Ban discloses a method of enhancing a life span of a read/write

storage medium, i.e., flash media, the method comprising the steps of identifying whether a file

on read/write storage medium is a static file or a dynamic file, i.e., identify the data is stored in

the static areas or the non-static areas (col. 4 lines 12-53 and col. 5 line 59 through col. 6 line

18). Ban differs from the claimed invention in not specifically teaching migrating the file to a

dynamic region of the read/write storage medium if the file is a static file and migrating the file

to a static region of the read/write storage medium if the file is a dynamic file. However,

Lofgren teaches a computer system as defined in figure 1 comprising flash electrically erasable

and programmable read only memory (11, figure 1), i.e., read/write storage medium, is divided

into a plurality of memory banks for data storage (col. 3 lines 16-28 and col. 6 lines 23-55)

which in respond to the memory operation from/to the micro-processor (17, figure 1) via the

memory controller (13, figure 1), and the memory controller is further manages operation of the

EEPROM memory in a way to maximize the lifetime of the memory system by avoiding uneven

use of any one part of it (col. 3 lines 3-15), in addition, Lofgren teaches the EEPROM memory is

further calculate the rewrite cycle of the each bank wherein the EEPROM memory is divided

into most heavily used bank, i.e., dynamic region, and least used bank, i.e., static region, by the

result of the calculation based on the rewrite/erase cycle, and data is transferred between the

most heavily used and least used banks in the way of swapping the data in between of these

banks (col. 4 line 46 through col. 5 line 31 and figure 5). Therefore, it would have been obvious

to a person of ordinary skill in the art at the time the invention was made to modify the

read/write storage medium of Ban in having the steps of migrating the file to a dynamic region of

the read/write storage medium if the file is a static file and migrating the file to a static region of

the read/write storage medium if the file is a dynamic file, as per teaching by the storage system

of Lofgren, because it allows for extending overall memory system lifetime without having to

provide any replacement groups of the memory cells which maximize the lifetime of the memory

system by avoiding uneven use of any one part of the memory system.

Regarding claim 2, Lofgren discloses the method of counting a number of rewrite cycles

of the file via the cycle count field (73, figure 4) in header portion (col. 6 line 56 through col. 7

line 28).

Regarding claim 3, Lofgren discloses the method of comparing the number of rewrite cycles of the file to a predetermined rewrite cycle threshold (col. 5 lines 56-65).

Regarding claims 4-5, Lofgren discloses the predetermined rewrite cycle threshold is associated with a read/write storage medium identifier and a drive identifier for the read/write storage medium (col. 4 lines 11-31).

Regarding claim 6, Lofgren discloses the method wherein the predetermined rewrite cycle threshold is based on self-testing by performing rewrite cycles to a data block of the read/write storage medium until the data block is unstable (col. 4 lines 12-61 and col. 6 line 56 through col. 7 line 62).

Regarding claims 7-8, Lofgren discloses the method wherein the predetermined rewrite cycle threshold and the number of rewrite cycles of the file are stored in a file allocation table (col. 4 lines 32-61).

Regarding claims 9-11, the difference between Lofgren and the claims is the claims specifically recite the read/write storage medium comprises a compact disk read/write disk, a tape drive, a floppy disk drive. However, having this vary type of memory does not have a disclosed purpose nor is this kind of the memories disclosed to overcome any deficiencies in the prior art. As such, the read/write medium may have been of any kind of the memory. In addition, since Lofgren discloses the read/write medium is a flash electrically erasable and programmable read only memory (col. 1 lines 5-19 and col. 3 lines 5-28), the ordinary artisan would realize a possible kind of the memories can be applied as the current technology would warrant. Accordingly, it would have been an obvious matter of design choice to utilize the storage system of Lofgren wherein the read/write storage medium is a flash electrically erasable

and programmable read only memory as disclosed supra, since applicant has not disclosed that a

flash electrically erasable and programmable read only memory as opposed to other kind of

memories, overcomes a deficiency in the prior art or is for any stated purpose.

Regarding claim 12, Lofgren discloses the method wherein the read/write storage

medium comprises an electrically erasable medium, i.e., flash electrically erasable and

programmable read only memory (col. 1 lines 5-19 and col. 3 lines 5-28).

Regarding claim 13, the limitations of the claim are rejected as the same reasons set forth

in claim 1.

Regarding claim 14, the limitations of the claim are rejected as the same reasons set forth

in claim 2.

Regarding claim 15, the limitations of the claim are rejected as the same reasons set forth

in claim 3.

Regarding claim 16, Ban discloses the file system for identifying a file type of the file,

i.e., identifying the data is stored in the static areas or the non-static areas (col. 4 lines 12-53 and

col. 5 line 59 through col. 6 line 18).

Regarding claim 17, Ban discloses a system for enhancing a life span of a read/write

storage medium, i.e., flash memory, the system comprise to identifying whether a file on a

read/write storage medium is a static file or a dynamic file, i.e., identify the data is stored in the

static areas or the non-static areas (col. 4 lines 12-53 and col. 5 line 59 through col. 6 line 18).

Ben differs from the claimed invention in not specifically teaching the system comprising a

processor-executable file system adapted to perform the steps of migrating the file to a dynamic

region of the read/write storage medium if the file is a static file, and migrating the file to a static

region of the read/write storage medium if the file is a dynamic file. However, Lofgren teaches

the computer system as defined in the figure 1 comprising a micro-processor (17, figure 1) to

execute the memory access to the flash electrical erasable and programmable read only memory,

i.e., read/write medium via the memory controller (13, figure 1), wherein the EEPROM is

divided into a plurality of memory banks for data storage (col. 3 lines 16-28 and col. 6 lines 23-

55), and the memory controller is further manages operation of the EEPROM memory in a way

to maximize the lifetime of the memory system by avoiding uneven use of any one part of it (col.

3 lines 3-15), in addition, Lofgren teaches the EEPROM memory is further calculate the rewrite

cycle of the each bank wherein the EEPROM memory is divided into most heavily used bank,

i.e., dynamic region, and least used bank, i.e., static region, by the result of the calculation of the

rewrite/erase cycle, and data is transferred between the most heavily used and least used banks in

the way of swapping the data in between of these banks (col. 4 line 46 through col. 5 line 31 and

figure 5). Therefore, it would have been obvious to a person of ordinary skill in the art at the

time the invention was made to modify the storage system of Ban in having a processor-

executable file system adapted to perform the steps of migrating the file to a dynamic region of

the read/write storage medium if the file is a static file, and migrating the file to a static region of

the read/write storage medium if the file is a dynamic file, as per teaching by the storage system

of Lofgren, because it allows for extending overall memory system lifetime without having to

provide any replacement groups of the memory cells which maximize the lifetime of the memory

system by avoiding uneven use of any one part of the memory system.

Regarding claim 18, the limitations of the claim are rejected as the same reasons set forth

in claim 2.

Regarding claim 19, the limitations of the claim are rejected as the same reasons set forth

in claim 3.

Conclusion

7.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

Soemo et al. (US Pub. No. 2003/0,078,907) discloses partially embedded database and an

embedded database manager for a control system wherein the database is configured as a static

data file containing static data and a dynamic data file containing dynamic data, and the static

data file is stored in a static memory device and the dynamic data file is stored in a dynamic

memory device ([0015]-[0016] and abstract).

Chang et al. (US PAT. 6,831,865) discloses maintaining erase counts in non-volatile

storage systems wherein a data structure in a non-volatile memory includes a first indicator that

provides an indication of a number of times a first block of a plurality of blocks in a non-volatile

memory has been erased (col. 3 line 29 through col. 4 line 22).

Tamada et al. (US PAT. 6,744,670) discloses an non-volatile semiconductor memory

device comprising a number of times of rewriting of memory cells is stored by number of rewrite

times storage section, a processor sets a condition on a write pulse on the basis of a value

obtained by updating a count value of the number of rewrite times counter and controls the

operation of rewriting (col. 8 line 48 through col. 9 line 63).

Assar et al. (US PAT. 5,485,595) discloses flash memory mass storage architecture

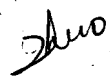incorporating wear leveling technique without using CAM cells which comprising a counter

tracks the number of times each block is erased with a programmable maximum value for the

counter in order to avoid the erase-before-write cycle each time information stored in the mass

storage is changed (col. 9 line 12 through col. 10 line 8).

8.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Zhuo H. Li whose telephone number is 571-272-4183. The

examiner can normally be reached on M-F 9:00am - 6:30pm.

        If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Matthew Kim can be reached on 571-272-4182. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

9.   Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Zhuo H. Li

Patent Examiner
Art Unit 2189

MATTHEW KIM